

REMARKS/ARGUMENTS

The specification is amended on page 17, at lines 1-3, in order to delete the abbreviation, (DMSO), because this abbreviation is not descriptive of the phrase, dimethyl disulphide derivatives. The specification is also amended on page 28, at line 18, to include U.S. patent Nos.: 5,689,050 and 5,789,220 in place of U.S. patent No. 5,789,050, in accordance with Applicant's previous amendment to the specification on October 13, 2010.

Claims 1-17, 26 and 32 were pending. Claims 11, 12, and 26 are amended. Claim 11 is amended to recite that a first nucleotide sequence encoding the delta-9 desaturase enzyme from *Anacystis nidulans* in operable linkage with a second nucleotide sequence encoding an endoplasmic reticulum membrane retention and retrieval signal sequence. Claim 11 is also amended to limit the endoplasmic reticulum membrane retention and retrieval signal sequence to the sequence set forth in SEQ ID NO:3 or SEQ ID NO:5. Claim 12 is amended with respect to the terms, "recombinant polypeptide" and "polypeptide," to accord with the antecedent basis set forth in amended claim 11. Support for these amendment can be found, for example, in the claims as originally filed, also in the specification at page 5, at lines 21-29; also on page 6, at lines 1-28; also on pages 10-11, at lines 12-28, under the heading, "Endoplasmic Reticulum Retention and Retrieval Signals,"; also on page 12, at lines 8-21; also on page 13, at lines 3-15; and also in Example 2, on pages 19-20. Claim 26 is amended to correct a typographical error. Accordingly, Applicants submit that no new matter is introduced by way of these amendments. After entry of the above amendments, claims 1-17, 26 and 32 are pending.

I. CLAIM OBJECTIONS:

The Office Action objects to claim 26 regarding the typographical error in the recitation "ncontainin." Claim 26 is amended to address this objection by replacing the aforementioned term with the term "containing." As such, Applicants respectfully request that the objection to claim 26 be withdrawn.

II. REJECTION OF CLAIMS 11-15, 26 AND 32 UNDER 35 U.S.C. §102(b) IN VIEW OF NISHIZAWA *ET AL.*, U.S. PATENT NO. 6,043,411.

Claims 11-15, 26 and 32 are rejected under 35 U.S.C. § 102(b) as being anticipated by Nishizawa *et al.* (US Patent 6,043,411).

The Office Action sets forth that that Nishizawa *et al.* teach a delta-9 desaturase coding sequence from the prokaryote *Anacystis* that encodes a polypeptide of SEQ ID NO: 2, wherein SEQ ID NO: 2 comprises the amino acid sequence of SEQ ID NO: 3 (KKXX at amino acids 263-266). The Office Action further sets forth that the claims are allegedly broadly drawn to a nucleic acid encoding an *Anacystis nidulans* delta-9 desaturase in operable linkage with the amino acids KKXX and do not define “operable linkage” in such a way as to exclude the presence of the amino acid sequence KKXX that is found within the delta-9 desaturase coding sequence of *Anacystis nidulans* taught by Nishizawa *et al.* Therefore the Office Action concludes that the claims are anticipated by Nishizawa *et al.*, given that there are allegedly no limitations in the claim that distinguish the claimed nucleic acid sequence from that found in the cited reference.

Applicants submit that Nishizawa *et al.* does not anticipate the claimed invention because Nishizawa *et al.* fails to disclose the limitation of claim 11 regarding “[a] nucleic acid molecule comprising a first nucleotide sequence encoding a delta-9 desaturase enzyme from *Anacystis nidulans* in operable linkage with a second nucleotide sequence linked to a 3’ end of the first nucleotide sequence, the second nucleotide sequence encoding an endoplasmic reticulum membrane retention and retrieval signal sequence set forth in SEQ ID NO: 3 or SEQ ID NO: 5.” In Nishizawa *et al.*, the KKXX sequence is found within the delta-9 desaturase coding sequence. In contrast to Nishizawa *et al.*, the endoplasmic retention and retrieval signal in the claimed invention is found at the 3’ end of the delta-9 desaturase coding sequence.

As set forth below, claim 11 is amended such that the “operable linkage” excludes the KKXX sequence that is found within the delta-9 desaturase coding sequence taught by Nishizawa *et al.* The term “operably linked” is defined in the present application on page 12, at lines 8-21. The operative linkage of the endoplasmic reticulum retention and retrieval signal sequence to the nucleotide sequence encoding the delta-9 desaturase enzyme is specifically

indicated to mean that the signal is added to the carboxy terminal of the delta-9 desaturase enzyme. In accordance with Applicant's definition of "operably linked," claim 11 is amended such that the addition or fusion of an endoplasmic reticulum retention and retrieval signal sequence is to the 3' end of the nucleotide sequence encoding the delta-9 desaturase enzyme. This placement of the endoplasmic retention signal at the 3' end of delta-9 desaturase is disclosed in Example 2 of the specification as filed. In contrast to claim 11 in the present case, the KKXX amino acid sequence of Nishizawa *et al.* is found within the delta-9 desaturase coding sequence. Accordingly, Nishizawa *et al.* do disclose every limitation of claim 11. The Office Action has not identified where Nishizawa *et al.* disclose that the endoplasmic reticulum retention and retrieval signal sequence are operably linked to a delta-9 desaturase coding sequence as claimed. Furthermore, the Office Action has not identified where Nishizawa *et al.* disclose that the endoplasmic reticulum retention and retrieval signal sequence target the delta-9 desaturase enzyme to the endoplasmic reticulum. As such, Applicants submit that neither claim 11, nor are claims 12-17, 26 and 32, which depend from claim 11, are anticipated by Nishizawa *et al.* Accordingly, Applicants respectfully request that the rejection of claims 11-17, 26 and 32 under 35 U.S.C. § 102(b) be withdrawn.

III. REJECTION OF CLAIMS 11-17, 26 AND 32 UNDER 35 USC § 103(a) IN VIEW OF NISHIZAWA *ET AL.* AND MARTIN *ET AL.*, WO 0011012.

Claims 11-17, 26 and 32 are rejected under 35 U.S.C. §103 (a) as allegedly being obvious in view of Nishizawa *et al.* and Martin *et al.* The Office Action alleges that Nishizawa *et al.* teach a delta-9 desaturase nucleic acid sequence from the prokaryote *Anacystis* for transformation of plants and extraction of oils with reduced saturation of fatty acids, wherein the nucleic acid sequence encodes a polypeptide of SEQ ID NO: 2, and SEQ ID NO: 2 comprises the amino acid sequence of SEQ ID NO: 3. The Office Action acknowledges that Nishizawa *et al.* do not specifically teach transformation of canola.

The Office Action alleges that Martin *et al.* teach a nucleic acid sequence encoding a heterologous or synthetic delta-9 desaturase operably linked to an endoplasmic reticulum (ER) retention and retrieval signal sequence, including a sequence having a KKXX motif, where said sequence in a vector, a host cell, a plant cell or transgenic plant, including

Brassica (mustard), olive (*Olea*), oil palm and corn, produces plants with reduced levels of saturated fatty acids. The Office Action sets forth that it would have been obvious to one skilled in the art to use the teachings of Nishizawa *et al.* to transform other plant species, such as canola (*Brassica*), to produce plants having reduced levels of saturated fatty acids, as taught by Martin *et al.* Applicants respectfully disagree.

Applicant submits that neither Martin *et al.* nor Nishizawa *et al.* teach or suggest the limitation of claim 11 regarding “a first nucleotide sequence encoding a delta-9 desaturase enzyme from *Anacystis nidulans* in operable linkage with a second nucleotide sequence linked to a 3’ end of the first nucleotide sequence, the second nucleotide sequence encoding an endoplasmic reticulum membrane retention and retrieval signal sequence.” Specifically, Nishizawa *et al.* fail to teach or suggest that the endoplasmic retention signal is found at the 3’ end of the delta-9 desaturase coding sequence. Furthermore, Martin *et al.* fail to make up for the deficiency between Nishizawa *et al.* and the claimed invention.

Nishizawa *et al.* teaches the use of a targeting sequence which would target a delta-9 desaturase to the chloroplasts (see for example, column 6, lines 1-7, 10-12). However, the Office Action has not identified where Nishizawa *et al.* teach or suggest the use of an endoplasmic reticulum retention and retrieval signal as claimed. The Office Action has also not identified where Nishizawa *et al.* teach or suggest DNA constructs linking a coding sequence encoding an endoplasmic reticulum retention and retrieval signal to a delta-9 desaturase coding sequence as claimed. As such, the Office Action has not set forth that Nishizawa *et al.* teach or suggest the limitation of claim 11 regarding “a first nucleotide sequence encoding a delta-9 desaturase enzyme from *Anacystis nidulans* in operable linkage with a second nucleotide sequence linked to a 3’ end of the first nucleotide sequence, the second nucleotide sequence encoding an endoplasmic reticulum membrane retention and retrieval signal sequence.”

Martin *et al.* disclose a chimeric fatty acid delta-9 desaturase gene, comprising a delta-9 desaturase sequence, preferably derived from yeast, and a cytochrome B5 sequence. Martin *et al.* also describe chimeric genes with residues that act as membrane targeting or retention signals (see, for example, page 14, lines 7-8) or including elements derived from native plant desaturases that enhance membrane targeting or retention (see, for example, page 14, line

19). However, Martin *et al.* do not teach or suggest the use of endoplasmic reticulum signals to transport the desaturase to the endoplasmic reticulum as claimed. Specifically, Martin *et al.* fail to teach or suggest that the endoplasmic retention signal is found at the 3' end of the delta-9 desaturase coding sequence. In fact, Martin *et al.* teach away from transporting the delta-9 desaturase to the endoplasmic reticulum. See Martin *et al.* on page 5, lines 6-8, wherein Martin *et al.* teach away from the claimed invention and state that "no [delta]-9 desaturase activity has been identified in the cytoplasm or the endoplasmic reticulum of plants."

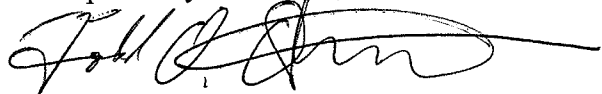
Therefore, because neither Nishizawa *et al.* nor Martin *et al.* teach or suggest the limitation of claim 11 regarding "a first nucleotide sequence encoding a delta-9 desaturase enzyme from *Anacystis nidulans* in operable linkage with a second nucleotide sequence linked to a 3' end of the first nucleotide sequence, the second nucleotide sequence encoding an endoplasmic reticulum membrane retention and retrieval signal sequence," Applicants submit that the claimed invention is not obvious in view of Nishizawa *et al.* and Martin *et al.* As such, Applicants respectfully request that the rejection of claims 11-17, 26 and 32 under 35 U.S.C. §103(a) be withdrawn.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 925-472-5000.

Respectfully submitted,



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